



SUBSTITUTE
SEQUENCE LISTING

<100> Rafalski, J. Antoni
Cahoon, Rebecca E.
Coughlan, Sean
Miao, Guo-Hua

<120> PLANT VITAMIN E BIOSYNTHETIC ENZYMES

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<150> 60/110,781

<151> 1998-12-03

<160> 43

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<213> Zea mays

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tctggtgtgg tccatggaga gtggcgagca catgccggac aagagaaagt ttgttagtga 180

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cgacgcgtac tacctcccgg actggtgctc accttcagac tatgtgaaca ttgccaagtc 360
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gaagacgata agaggcgcca tggatgatgcc gctaataatg cagggctaca agaaggggct 540
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cacaagttac tagcacagca caggatgcaa gtgcatatgt agatcatggc acatcgccgt 660
cactcatcat actgcacaaa atcaaatctc caggacattt aataattctg cacctcanat 720
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 <213> Zea mays

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Pro Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly
      35              40              45

Glu His Met Pro Asp Lys Arg Lys Phe Val Ser Glu Leu Ala Arg Val
      50              55              60

Ala Ala Pro Gly Gly Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn
      65              70              75              80

Leu Asp Pro Ser Glu Thr Ser Leu Lys Pro Asp Glu Leu Ser Leu Leu
      85              90              95

Arg Arg Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser
      100             105             110

Asp Tyr Val Asn Ile Ala Lys Ser Leu Ser Leu Glu Asp Ile Lys Thr
      115             120             125

Ala Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys
      130             135             140

Ser Ala Leu Thr Trp Lys Gly Phe Thr Ser Leu Leu Thr Thr Gly Trp
      145             150             155             160

Lys Thr Ile Arg Gly Ala Met Val Met Pro Leu Met Ile Gln Gly Tyr
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Lys Lys Gly Leu Ile Lys Phe Thr Ile Ile Thr Cys Arg Lys Pro
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 gatgagctga atctcctgaa aaggatatgc gatgcatatt atctcccaga ctggtgctct 180
 ccttctgatt atgtcaaaat tgccgagtca ctgtctcttg aggatataag gacagctgat 240
 tgggtcaagag aacgtcgccc caatccggnc tgcngggttat taaatnaagc aattgacatg 300
 gnaaggggta actttctcct ggctaagaan tgggtgggaa gacgattaag aaggtggaat 360
 ggggtgatgcc tccggatgat nnaaggntac aaagaaangg gtcaacaaat ttaacaanaa 420
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 20 25 30
 Pro Ser Glu Glu Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys Arg
 35 40 45
 Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr
 50 55 60
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 gcctcgggctt cccctcgcgc cggcctctgc ctccaccacc accgcccgcg ccgcccgcagc 180
 agccggagga cgaaactcgc cgtgcgcgcg atggcaccga cgttgctctc gtcgtcgacg 240
 gcggcggcag ctcccccggg gctgaaggag ggcattcgcg ggctctacga cgaancgtcc 300
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 ggcgcctcca tgtccgacca ccgcccgcgc ccagttcgca tgatcgagga cctcgccttc 420
 gccgcctccc cgatgatcgg agaagaacca aaatgtattg atttggtgtg gattggtggt 480
 actcaagata ntggngaaca atacggacgc atgctacgna tacttgatcg gtgcagggtga 540
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 <223> Xaa = ANY AMINO ACID

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 20 25 30
 Arg Cys Thr Ser Arg His Leu Cys Ala Ser Ala Ser Pro Arg Ala Gly
 35 40 45
 Leu Cys Leu His His His Arg Arg Arg Arg Ser Ser Arg Arg Thr
 50 55 60

Lys Leu Ala Val Arg Ala Met Ala Pro Thr Leu Ser Ser Ser Ser Thr
 65 70 75 80
 Ala Ala Ala Ala Pro Pro Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr
 85 90 95
 Asp Glu Xaa Ser Gly Val Trp Glu Ser Ile Trp Gly Glu His Met His
 100 105 110
 His Gly Phe Tyr Asp Ala Gly Glu Gly Ala Ser Met Ser Asp His Arg
 115 120 125
 Arg Ala Pro Val Arg Met Ile Glu Asp Leu Ala Phe Ala Ala Ser Pro
 130 135 140

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 ttcgggcatc ggcagcgagc tcggagagag gggagatagt attggagcag aagccgaaga 180
 aggatgacaa gaagaagctg cagaaggaa tcgcagagtt ttacgacgag tcgtctggct 240
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 tttcgctttc ggatcatcgt gctgctcaga tccgaatgat ccaagagtct cttcgctttg 360
 cctctgtttc tgaggagcgt agtaaatggc ccaagagtat agttgatgtt ggggtgtggca 420
 taggtggcag ctctagatac ctggccaaga aatttggagc aaccagtgtg ggcatactc 480
 tgagtcctgt tcaagctcaa agagcaaagt ctcttgctgc tgctcaagga ttggctgata 540
 aggtttcctt tcaggttget gacgctctac agcaaccatt ctctgacggc cagtttgatc 600
 tgggtgtggtc catggagagt ggagagcata tgccctgacaa agctaagttt gttggagagt 660
 tagctcgggt agcagcacca ggtgccatta taataatagt aacatggtgc cacagggatc 720
 ttggccctga cgaacaatcc ttacatccat gggagcaaga tctcttaaag aagatttgcg 780
 atgcatatta cctccctgcc tgggtgctcaa cttctgatta tgttaagttg ctccaatccc 840
 tgtcacttca ggacatcaag tcagaagatt ggtctcgctt tgttgctcca ttttggccag 900
 cagtatacgc ctcagccttc acatggaagg gtctatcttc actcttgagc agtggttaagc 960
 ttggaattta tattgcattt caaaaacaaa ccccccatc ttctattgca acttgcaagt 1020
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 tacaagaaaa tatcttttat atatataaat gattcaatca aattacttga tgaggattat 1200
 gagtgaatat gagaggacag tcatagaaac tttatcctac attccttcta tttccacttc 1260
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 Pro Arg Ser Trp Ala Pro Ile Arg Ala Ser Ala Ala Ser Ser Glu Arg
 35 40 45

Gly Glu Ile Val Leu Glu Gln Lys Pro Lys Lys Asp Asp Lys Lys Lys
 50 55 60
 Leu Gln Lys Gly Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Leu Trp
 65 70 75 80
 Glu Asn Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Asp
 85 90 95
 Ser Thr Val Ser Leu Ser Asp His Arg Ala Ala Gln Ile Arg Met Ile
 100 105 110
 Gln Glu Ser Leu Arg Phe Ala Ser Val Ser Glu Glu Arg Ser Lys Trp
 115 120 125
 Pro Lys Ser Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg
 130 135 140
 Tyr Leu Ala Lys Lys Phe Gly Ala Thr Ser Val Gly Ile Thr Leu Ser
 145 150 155 160
 Pro Val Gln Ala Gln Arg Ala Asn Ala Leu Ala Ala Ala Gln Gly Leu
 165 170 175
 Ala Asp Lys Val Ser Phe Gln Val Ala Asp Ala Leu Gln Gln Pro Phe
 180 185 190
 Ser Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His
 195 200 205
 Met Pro Asp Lys Ala Lys Phe Val Gly Glu Leu Ala Arg Val Ala Ala
 210 215 220
 Pro Gly Ala Ile Ile Ile Ile Val Thr Trp Cys His Arg Asp Leu Gly
 225 230 235 240
 Pro Asp Glu Gln Ser Leu His Pro Trp Glu Gln Asp Leu Leu Lys Lys
 245 250 255
 Ile Cys Asp Ala Tyr Tyr Leu Pro Ala Trp Cys Ser Thr Ser Asp Tyr
 260 265 270
 Val Lys Leu Leu Gln Ser Leu Ser Leu Gln Asp Ile Lys Ser Glu Asp
 275 280 285
 Trp Ser Arg Phe Val Ala Pro Phe Trp Pro Ala Val Ile Arg Ser Ala
 290 295 300
 Phe Thr Trp Lys Gly Leu Ser Ser Leu Leu Ser Ser Gly Lys Leu Gly
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 atagactcng cttgctgtcg ccttggttagc tgaataattc gtgttaccgt gcctctgtat 960
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 20 25 30
 Ala Gln Ile Arg Met Ile Glu Glu Ala Leu Ala Phe Ala Ala Val Pro
 35 40 45
 Asp Asp Pro Thr Asn Lys Pro Lys Thr Ile Val Asp Val Gly Cys Gly
 50 55 60

Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu	Gly	Glu	Gln	Ile	Trp	Ser	Thr	Met	
65					70					75					80	
Leu	Trp	Asp	His	Ile	Asp	Pro	Val	Gln	Ala	Glu	Arg	Gly	Asn	Ala	Leu	
			85						90					95		
Ala	Ala	Ala	Gln	Gly	Val	Val	Arg	Thr	Arg	Phe	Phe	Pro	Ile	Ala	Asp	
			100					105					110			
Leu	Trp	Glu	Gln	Pro	Phe	Pro	Gly	Trp	Ala	Phe	Asp	Leu	Val	Xaa	Xaa	
		115					120					125				
Xaa	Xaa	Xaa	Xaa	Xaa	His	Met	Pro	Asn	Lys	Gln	Lys	Phe	Val	Ser	Glu	
	130					135					140					
Leu	Ala	Arg	Val	Ala	Ala	Pro	Gly	Ala	Thr	Ile	Ile	Ile	Val	Thr	Trp	
145					150					155					160	
Cys	His	Arg	Asn	Leu	Ala	Pro	Ser	Glu	Asp	Ser	Leu	Lys	Pro	Asp	Glu	
			165						170					175		
Leu	Asn	Leu	Leu	Lys	Lys	Ile	Cys	Asp	Ala	Tyr	Tyr	Leu	Pro	Asp	Trp	
		180						185					190			
Cys	Ser	Pro	Ser	Asp	Tyr	Val	Lys	Ile	Ala	Glu	Ser	Leu	Ser	Leu	Glu	
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Asp	Ile	Lys	Thr	Ala	Asp	Trp	Ser	Glu	Asn	Val	Ala	Pro	Phe	Trp	Pro	
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Ala	Val	Ile	Gln	Ser	Ala	Leu	Thr	Trp	Lys	Gly	Leu	Thr	Ser	Leu	Leu	
225					230					235					240	
Arg	Ser	Gly	Trp	Lys	Thr	Ile	Lys	Gly	Ala	Leu	Val	Met	Pro	Leu	Met	
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Ile	Gln	Gly	Tyr	Lys	Lys	Gly	Leu	Ile	Lys	Phe	Lys	His	His	His	Leu	
		260						265				270				
Pro	Gln	Thr	Pro	Ser	Ser	His	Arg	Arg	Arg	Thr	Trp	Arg	Pro	His	Arg	
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 cgctcctgga tcaggccaca ggagggggagc gatgggtggag gcggccaccg taggcggcgg 300
 aggtggcggt cctcctccct agtccccaga cccggctgga ggagggagtg atgggtggcg 360
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 <213> Oryza sativa

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 20 25 30
 Gly Asn Ser Ala His Ala Ser Leu Leu Leu Arg Ser Ala Ser Val Ala
 35 40 45
 Phe Leu Phe Thr Ala Pro Tyr Gly Gly Asp His Gly Val Gly Ala Asp
 50 55 60
 Ala Ala Thr Thr Ala Ser Ile Pro Ser Phe Ser
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 ggacgtgggc accgccgaga gcggcctcaa ctccggtggtg ctgcccaaca acgcggagac 180
 cgtgctgctg ccgctcaacg agccgggtgca cggcaccaag cggcggagcc agatacagac 240
 gtacctggac caccacggcg gcccgggggt gcagcacatc gcgctggcca gcgacgacgt 300
 gtcggggacg ctganggaga tgccngggcg ctccgcatgg gcggttcgat tcttggggcc 360
 gccgccgcca actactacga cggctgcgcg gcgcncggg acttctctcg ggagagcaat 420
 taacaatgcc aagactcngg tgtcctggac aaggatacaa gggtttccaa tnttaacaag 480
 cattgaanag nnactttctg gngagatcaa gatggtgatg aaagtnaatg gaagntncaa 540
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 <213> Oryza sativa

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 20 25 30
 Ala Glu Phe Thr Ala Glu Asp Val Gly Thr Ala Glu Ser Gly Leu Asn
 35 40 45

Ser Val Val Leu Ala Asn Asn Ala Glu Thr Val Leu Leu Pro Leu Asn
 50 55 60
 Glu Pro Val His Gly Thr Lys Arg Arg Ser Gln Ile Gln Thr Tyr Leu
 65 70 75 80
 Asp His His Gly Gly Pro Gly Val Gln His Ile Ala Leu Ala Ser Asp
 85 90 95
 Asp Val Leu Gly Thr Leu Xaa Glu Met Pro Gly Ala Ser Ala Trp Ala
 100 105 110
 Val Arg Phe Leu Gly Pro Pro Pro Pro Thr Thr
 115 120

<210> 15
 <211> 1027
 <212> DNA
 <213> Glycine max

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 <222> (829)
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 <222> (1012)
 <223> n= a, c, g, or t

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 <222> (1017)
 <223> n= a, c, g, or t

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 agcccaagcc caacctgggt ttaagctcgt cggtttcaaa aacttcgtcc gaaccaatcc 120
 taagtcggac cgctttcaag tcaaccgctt ccaccacatc gagttctggg gcaccgatgc 180
 caccaacgcc tctcgccgat tctcttgggg acttggaatg cctattgtgg caaaatctga 240
 tctctccacc ggaaaccaa tccacgcctc ctacctctc cgctccggcg acctctcctt 300
 cctcttctcc gctccttact ctccctctct ctccgcccgc tccctccgtg cctcctccgc 360
 ctccattccc agtttcgacg ccgccacctg ccttgccctt gctgccaaac acggcttcgg 420
 cgtccgcgcc atcgcccttg aagtcgccga cgcggaagcc gctttcagcg ccagcgtcgc 480
 gaaaggagcc gagccggcgt cgcgcgcggt tctcgtcgac gatcgaccg gcttcgcgga 540
 ggtgcgcctc tacggcgacg tgggtgctccg ctacgtcagc tacaaggacg ccgcgcgcga 600
 ggcgccacac gcagatncgt cgcggtgggt cctgcgggga ttcgaggccg cggcgctcgtc 660
 gtcttcggtt ccggagctgg actacgggat ccggcggtg gaccacgccg tcgggaacgt 720
 tccggagctg gcgcggcgcg tgaggtacct gaaaggcttc agcggattcc acgagttcgc 780
 ggagttcacc gcggaggacg tgggaacgag cgagagcggg ttgaactcng tggttctggc 840
 ngaacaactc ggagacggtg ttgctgccgc tgaacnagcc cggtttacgg aacgaaagag 900
 gaagaagcca nattgagnnc gtatttngaa cacaancnaa aggtgcttgg tgtgcagcaa 960
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 acgtttg 1027

<210> 16
 <211> 276
 <212> PRT
 <213> Glycine max

<220>
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 <222> (202)
 <223> Xaa = ANY AMINO ACID

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 Ala Gln Ala Gln Pro Gly Phe Lys Leu Val Gly Phe Lys Asn Phe Val
 20 25 30
 Arg Thr Asn Pro Lys Ser Asp Arg Phe Gln Val Asn Arg Phe His His
 35 40 45
 Ile Glu Phe Trp Cys Thr Asp Ala Thr Asn Ala Ser Arg Arg Phe Ser
 50 55 60
 Trp Gly Leu Gly Met Pro Ile Val Ala Lys Ser Asp Leu Ser Thr Gly
 65 70 75 80
 Asn Gln Ile His Ala Ser Tyr Leu Leu Arg Ser Gly Asp Leu Ser Phe
 85 90 95
 Leu Phe Ser Ala Pro Tyr Ser Pro Ser Leu Ser Ala Gly Ser Ser Ala
 100 105 110
 Ala Ser Ser Ala Ser Ile Pro Ser Phe Asp Ala Ala Thr Cys Leu Ala
 115 120 125
 Phe Ala Ala Lys His Gly Phe Gly Val Arg Ala Ile Ala Leu Glu Val
 130 135 140
 Ala Asp Ala Glu Ala Ala Phe Ser Ala Ser Val Ala Lys Gly Ala Glu
 145 150 155 160
 Pro Ala Ser Pro Pro Val Leu Val Asp Asp Arg Thr Gly Phe Ala Glu
 165 170 175
 Val Arg Leu Tyr Gly Asp Val Val Leu Arg Tyr Val Ser Tyr Lys Asp
 180 185 190
 Ala Ala Pro Gln Ala Pro His Ala Asp Xaa Ser Arg Trp Phe Leu Pro
 195 200 205
 Gly Phe Glu Ala Ala Ala Ser Ser Ser Ser Phe Pro Glu Leu Asp Tyr
 210 215 220
 Gly Ile Arg Arg Leu Asp His Ala Val Gly Asn Val Pro Glu Leu Ala
 225 230 235 240
 Pro Ala Val Arg Tyr Leu Lys Gly Phe Ser Gly Phe His Glu Phe Ala
 245 250 255

Glu Phe Thr Ala Glu Asp Val Gly Thr Ser Glu Ser Gly Leu Asn Ser
260 265 270

Val Val Leu Ala
275

<210> 17
<211> 511
<212> DNA
<213> Vernonia mesipifolia

<220>
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<222> (494)
<223> n= a, c, g, or t

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cgctgctcct gtaacccttg gaaacaacga cgctcgtattg tctgaagtta agcttttacgg 180
cgatgtcgtc ttccggtaca taagttacaa aaatccgaac tatacatctt cctttttgcc 240
cgggttcgag cccgttgaaa agacgtcgtc gttttatgac cttgactacg gtatccgccg 300
tttgaccac gccgtaggaa cgcccttgag cttgcttcgg cagtggacta cgtgaaatca 360
ttcaccggat tccatgagtt cgccgaattc accgcggagg acgtcgggac gagcgagagg 420
gaactgaatt cggtcgtttt agcttgcaac agtgagatgg tcttgattcc gatgaacgag 480
cgggtgtacg gaanaaaagg aagagccaga t 511

<210> 18
<211> 170
<212> PRT
<213> Vernonia mesipifolia

<220>
<221> UNSURE
<222> (165)
<223> Xaa = ANY AMINO ACID

<400> 18
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Ala Ile Ala Ile Glu Val Asp Asp Ala Glu Leu Ala Phe Ser Val Ser
20 25 30
Val Ser His Gly Ala Lys Pro Ser Ala Ala Pro Val Thr Leu Gly Asn
35 40 45
Asn Asp Val Val Leu Ser Glu Val Lys Leu Tyr Gly Asp Val Ala Phe
50 55 60
Arg Tyr Ile Ser Tyr Lys Asn Pro Asn Tyr Thr Ser Ser Phe Leu Pro
65 70 75 80
Gly Phe Glu Pro Val Glu Lys Thr Ser Ser Phe Tyr Asp Leu Asp Tyr
85 90 95
Gly Ile Arg Arg Leu Asp His Ala Val Gly Asn Val Pro Glu Leu Ala
100 105 110

Ser Ala Val Asp Tyr Val Lys Ser Phe Thr Gly Phe His Glu Phe Ala
 115 120 125

Glu Phe Thr Ala Glu Asp Val Gly Thr Ser Glu Arg Glu Leu Asn Ser
 130 135 140

Val Val Leu Ala Cys Asn Ser Glu Met Val Leu Ile Pro Met Asn Glu
 145 150 155 160

Pro Val Tyr Gly Xaa Lys Gly Arg Ala Arg
 165 170

<210> 19
 <211> 1165
 <212> DNA
 <213> Triticum aestivum

<220>
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 <222> (567)
 <223> n= a, c, g, or t

<220>
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 <222> (1039)
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 <222> (1126)
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 ccgcttccac acgctcgcc tccaccacgt cgagttctgg tgcgcggacg ccgcctccgc 180
 cgccggccgc ttgccttcg cgctcggcgc gccgctcgcc gccaggtcg acctctccac 240
 ggggaactcc gtgcacgcct ccagctgct ccgctcgggc aacctcgcc tctctttcac 300
 cgcgccctac gccaacggct gcgacgccgc caccgcctcc ctgccctcct tctccgccga 360
 cgccgcgcgc cggttctccg cggaccacgg gctcgcggtg cgctccatag cgctgcgcgt 420
 cgcgagcgc gccgaggcct tccgcgccag cgtcgacggg ggccgcgcgc cggccttcag 480
 ccccggtggac ctcgccgcgc gcttcggctt tgcggaggtc gagctctacg gcgacgtcgt 540
 gctccgcttc gtcagcatcc ggacggnacg gacgtgcctt cttgccgggg ttccganggcg 600
 ttgagcaacc ggggtgccgtg gactaanggc tgacacgnt tgacacgttg tccgnaagtc 660
 cggagcttgc ttccggcgccg cctaacgtag ccggctnaac gggttcaana attcgccagt 720
 taacacggag gacgtgggca cggccgagag cgggctcaac tcgatggtgc tcgccaacaa 780
 ctccggagggc gtgctgctgc cgctcaacga gccggtgcac ggcaccaagc gccggagcca 840
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 cagcgacgtg ctccaggacgc tcaggagat gcgtgcgcgc tccgccatgg gcggcttcga 960
 ctctctgccca ccccgctgc cgaagtacta cgaaggcgtg cggcgcatcg ccgggggatgt 1020
 gctctcggag gcgcaaatna aggaatgcaa gaactggggg tgctcntcca caaggaagaa 1080
 caaagggtgt tgctacaaat cctcaacaag ccaatntggg acaagccgac ttgttcctgg 1140
 agatattcac angatctggt gcatg 1165

<210> 20
 <211> 179
 <212> PRT
 <213> Triticum aestivum

<400> 20
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 Ser Asp Arg Phe His Thr Leu Ala Phe His His Val Glu Phe Trp Cys
 35 40 45
 Ala Asp Ala Ala Ser Ala Ala Gly Arg Phe Ala Phe Ala Leu Gly Ala
 50 55 60
 Pro Leu Ala Ala Arg Ser Asp Leu Ser Thr Gly Asn Ser Val His Ala
 65 70 75 80
 Ser Gln Leu Leu Arg Ser Gly Asn Leu Ala Phe Leu Phe Thr Ala Pro
 85 90 95

Tyr Ala Asn Gly Cys Asp Ala Ala Thr Ala Ser Leu Pro Ser Phe Ser
 100 105 110
 Ala Asp Ala Ala Arg Arg Phe Ser Ala Asp His Gly Leu Ala Val Arg
 115 120 125
 Ser Ile Ala Leu Arg Val Ala Asp Ala Ala Glu Ala Phe Arg Ala Ser
 130 135 140
 Val Asp Gly Gly Ala Arg Pro Ala Phe Ser Pro Val Asp Leu Gly Arg
 145 150 155 160
 Gly Phe Gly Phe Ala Glu Val Glu Leu Tyr Gly Asp Val Val Leu Arg
 165 170 175

Phe Val Ser

<210> 21
 <211> 1102
 <212> DNA
 <213> Zea mays

<220>
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 <222> (454)
 <223> n = a, c, g, or t

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 <222> (1072)
 <223> n = a, c, g, or t

<220>
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 <222> (1083)
 <223> n = a, c, g, or t

<220>
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 <222> (1092)
 <223> n = a, c, g, or t

<220>
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 <222> (1100)
 <223> n = a, c, g, or t

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 gcggcagyc actaccgcgc cccttcgcac gtcccgcgc actcccgcgc tctccgacgc 120
 gccgtcgta gcctgcgtcc gatggcctcg tcgacggctc agggccccgc gacggcgccg 180
 ccgggtctga aggagggcat cgcggggctg tacgacgagt cgtcggggct gtgggagaac 240
 atctggggcg accacatgca ccacggcttc tacgactcga gcgaggccgc ctccatggcc 300
 gatcaccgcc gcgcccagat ccgcgatgac gaggaggcgc tcgccttcgc cgggtgtccca 360
 gcctcagatg atccagagaa gacaccaaaa acaatagtcg atgtcggatg tggcattggt 420
 ggtagctcaa ggtacttggc gaagaaatac ggancgcagt gcactgggat cacgttgagc 480
 cctgttcaag ccgagagagg aaatgctctc gctgcagcgc aggggttggt ggatcagggt 540
 actctgcaag ttgctgatgc tctggagcaa ccgtttcctg acgggcagtt cgatctggtg 600
 tgggccatgg agagtggcga gcacatgccg gacaagagaa agtttggttag tgagctagca 660

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cgcggtggcgg ctcctggagg gacaataatc atcgtgacat ggtgccatag gaacctggat 720
ccatccgaaa cctcgctaaa gcccgatgaa ctgagcctcc tgaggaggat atgcgacgcg 780
tactacctcc cggactgggtg ctcaccttca gactatgtga acattgccaa gtcactgtct 840
ctcgaggata tcaagacagc tgactgggtcg gagaacgtgg ccccgttttg gcccgccgtg 900
ataaaatcag cgctaacatg gaagggcttc acctctctgc tgacgaccgg atggaagacg 960
atcagaggcg cgatgggtgat gccgctaata atccagggct acaagaaggg gctcatcaaa 1020
ttcaccatca tcacctgtcg caagcctgga gccgcgtagt gatctatacc gnccacggcg 1080
tcnttaactc tnacggaaan ct 1102

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<210> 22
<211> 352
<212> PRT
<213> Zea mays

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<220>
<221> UNSURE
<222> (152)
<223> Xaa = ANY AMINO ACID

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Ala Ala Cys Arg Arg Gly Ser His Tyr Arg Ala Pro Ser His Val Pro
      20              25              30

Arg His Ser Arg Arg Leu Arg Arg Ala Val Val Ser Leu Arg Pro Met
      35              40              45

Ala Ser Ser Thr Ala Gln Ala Pro Ala Thr Ala Pro Pro Gly Leu Lys
      50              55              60

Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Leu Trp Glu Asn
      65              70              75              80

Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Ser Glu Ala
      85              90              95

Ala Ser Met Ala Asp His Arg Arg Ala Gln Ile Arg Met Ile Glu Glu
      100              105              110

Ala Leu Ala Phe Ala Gly Val Pro Ala Ser Asp Asp Pro Glu Lys Thr
      115              120              125

Pro Lys Thr Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg
      130              135              140

Tyr Leu Ala Lys Lys Tyr Gly Xaa Gln Cys Thr Gly Ile Thr Leu Ser
      145              150              155              160

Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Ala Gln Gly Leu
      165              170              175

Ser Asp Gln Val Thr Leu Gln Val Ala Asp Ala Leu Glu Gln Pro Phe
      180              185              190

Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His
      195              200              205

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Met	Pro	Asp	Lys	Arg	Lys	Phe	Val	Ser	Glu	Leu	Ala	Arg	Val	Ala	Ala
210						215					220				
Pro	Gly	Gly	Thr	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	Asp
225					230					235					240
Pro	Ser	Glu	Thr	Ser	Leu	Lys	Pro	Asp	Glu	Leu	Ser	Leu	Leu	Arg	Arg
				245					250					255	
Ile	Cys	Asp	Ala	Tyr	Tyr	Leu	Pro	Asp	Trp	Cys	Ser	Pro	Ser	Asp	Tyr
			260					265					270		
Val	Asn	Ile	Ala	Lys	Ser	Leu	Ser	Leu	Glu	Asp	Ile	Lys	Thr	Ala	Asp
		275					280						285		
Trp	Ser	Glu	Asn	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Lys	Ser	Ala
		290				295					300				
Leu	Thr	Trp	Lys	Gly	Phe	Thr	Ser	Leu	Leu	Thr	Thr	Gly	Trp	Lys	Thr
305					310					315					320
Ile	Arg	Gly	Ala	Met	Val	Met	Pro	Leu	Met	Ile	Gln	Gly	Tyr	Lys	Lys
				325					330					335	
Gly	Leu	Ile	Lys	Phe	Thr	Ile	Ile	Thr	Cys	Arg	Lys	Pro	Gly	Ala	Ala
			340					345					350		

<210> 23

<211> 521

<212> DNA

<213> Oryza sativa

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<221> unsure

<222> (269)

<223> n = a, c, g, or t

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<221> unsure

<222> (274)

<223> n = a, c, g, or t

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<222> (286)

<223> n = a, c, g, or t

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<222> (302)

<223> n = a, c, g, or t

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<221> unsure

<222> (330)

<223> n = a, c, g, or t

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<221> unsure

<222> (381) .. (382)
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 <222> (473)
 <223> n = a, c, g, or t

<220>
 <221> unsure
 <222> (514)
 <223> n = a, c, g, or t

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 gatgagctga atctcctgaa aaggatatgc gatgcatatt atctcccaga ctggtgctct 180
 ccttctgatt atgtcaaaat tgccgagtc ctgtctcttg aggatataag gacagctgat 240
 tgggtcaagag aacgtcgccc caatccggnc tgcngggttat taaatnaagc aattgacatg 300
 gnaagggtta actttctcct ggctaagaan tgggtgggaa gacgattaag aagggtggaat 360
 ggggtgatgcc tccggatgat nnaaggntac aaagaaangg gtcaacaaat ttaacaanaa 420
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 ggctaacctt ctccaacaac gaattaatgg aaantttctga c 521

<210> 24
 <211> 172
 <212> PRT
 <213> Oryza sativa

 <400> 24
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 1 5 10 15
 Asp Leu Val Trp Ser Met Glu Ser Asp Glu His Met Pro Asp Lys Arg
 20 25 30
 Gln Phe Val Ser Glu Leu Ala Arg Val Ala Ala Pro Gly Ala Arg Ile
 35 40 45
 Ile Ile Val Thr Trp Cys His Arg Asn Leu Glu Pro Ser Glu Glu Ser
 50 55 60
 Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys Arg Ile Cys Asp Ala Tyr
 65 70 75 80
 Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr Val Lys Ile Ala Glu
 85 90 95
 Ser Leu Ser Leu Glu Asp Ile Arg Thr Ala Asp Trp Ser Glu Asn Val
 100 105 110
 Ala Pro Phe Trp Pro Ala Val Ile Lys Ser Ala Leu Thr Trp Lys Gly
 115 120 125
 Leu Thr Ser Leu Leu Arg Ser Gly Trp Glu Thr Val Arg Gly Ala Met
 130 135 140
 Val Met Pro Leu Val Ile Glu Gly Tyr Lys Lys Gly Leu Ile Lys Phe
 145 150 155 160
 Pro Ile Ile Thr Cys Arg Lys Pro Glu Thr Thr Gln
 165 170

<210> 25
 <211> 464
 <212> DNA
 <213> Oryza sativa

 <400> 25
 gcacgagtag agcccacggg cgcactggca ccgctgcatc cactgctccg ctgcacgagc 60
 cgtcatctct gcgcctcggc ttccctcgc gccggcctct gcctccacca ccaccgccgc 120
 cgccgccgca gcagccggag gacgaaactc gccgtgcgcg cgatggcacc gacgttgtcc 180
 tcgtcgtcga cggcgggcgc agtccccccg gggctgaagg agggcatcgc ggggctctac 240
 gacgagtcgt ccggcgtgtg ggagagcatc tggggcgagc acatgcacca cggttctac 300
 gacgccggcg aggcgcctc catgtccgac caccgccgcg ccagatccg catgatcgag 360
 gaatccctcg ccttcgccgc cgttccccga tgatgcgggt aacaaacca aaagtgttat 420
 ttactgtttg gtgttgcaaa tgggggtacc tcaaaaaaac tttg 464

 <210> 26
 <211> 128
 <212> PRT
 <213> Oryza sativa

<400> 26
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Arg Cys Thr Ser Arg His Leu Cys Ala Ser Ala Ser Pro Arg Ala Gly
20 25 30
Leu Cys Leu His His His Arg Arg Arg Arg Arg Ser Ser Arg Arg Thr
35 40 45
Lys Leu Ala Val Arg Ala Met Ala Pro Thr Leu Ser Ser Ser Ser Thr
50 55 60
Ala Ala Ala Ala Pro Pro Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr
65 70 75 80
Asp Glu Ser Ser Gly Val Trp Glu Ser Ile Trp Gly Glu His Met His
85 90 95
His Gly Phe Tyr Asp Ala Gly Glu Ala Ala Ser Met Ser Asp His Arg
100 105 110
Arg Ala Gln Ile Arg Met Ile Glu Glu Ser Leu Ala Phe Ala Ala Val
115 120 125

<210> 27
<211> 1189
<212> DNA
<213> Glycine max

<400> 27
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tcggggcatcg gcagcgagct cggagagagg ggagatagta ttggagcaga agccgaagaa 180
ggatgacaag aagaagctgc agaagggaat cgcagagttt tacgacgagt cgtctggctt 240
atggggagaac atttggggcg accacatgca ccatggcttt tatgactcgg attccactgt 300
ttcgcttttcg gatcatcgtg ctgctcagat ccgaatgac caagagtctc ttcgctttgc 360
ctctgtttct gaggagcgta gtaaattggcc caagagtata gttgatgttg ggtgtggcat 420
aggtggcagc tctagatacc tggccaagaa atttggagca accagtgtag gcatcactct 480
gagtcctgtt caagctcaaa gagcaaatgc tcttgctgct gctcaaggat tggctgataa 540
ggtttccttt caggttgctg acgctctaca gcaaccattc tctgacggcc agtttgatct 600
ggtgtggtcc atggagagtg gagagcatat gcctgacaaa gctaagtttg ttggagagtt 660
agctcgggta gcagcaccag gtgccattat aataatagta acatgggtgcc acagggatct 720
tggccctgac gaacaatcct tacatccatg ggagcaagat ctcttaaaga agatttgca 780
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<210> 28
<211> 350
<212> PRT
<213> Glycine max

<400> 28
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Pro	Arg	Ser	Trp	Ala	Pro	Ile	Arg	Ala	Ser	Ala	Ala	Ser	Ser	Glu	Arg		
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Gly	Glu	Ile	Val	Leu	Glu	Gln	Lys	Pro	Lys	Lys	Asp	Asp	Lys	Lys	Lys		
	50					55					60						
Leu	Gln	Lys	Gly	Ile	Ala	Glu	Phe	Tyr	Asp	Glu	Ser	Ser	Gly	Leu	Trp		
	65				70				75						80		
Glu	Asn	Ile	Trp	Gly	Asp	His	Met	His	His	Gly	Phe	Tyr	Asp	Ser	Asp		
				85					90					95			
Ser	Thr	Val	Ser	Leu	Ser	Asp	His	Arg	Ala	Ala	Gln	Ile	Arg	Met	Ile		
		100						105					110				
Gln	Glu	Ser	Leu	Arg	Phe	Ala	Ser	Val	Ser	Glu	Glu	Arg	Ser	Lys	Trp		
		115					120					125					
Pro	Lys	Ser	Ile	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg		
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Tyr	Leu	Ala	Lys	Lys	Phe	Gly	Ala	Thr	Ser	Val	Gly	Ile	Thr	Leu	Ser		
	145				150					155					160		
Pro	Val	Gln	Ala	Gln	Arg	Ala	Asn	Ala	Leu	Ala	Ala	Ala	Gln	Gly	Leu		
				165					170					175			
Ala	Asp	Lys	Val	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Gln	Gln	Pro	Phe		
			180					185					190				
Ser	Asp	Gly	Gln	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His		
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Met	Pro	Asp	Lys	Ala	Lys	Phe	Val	Gly	Glu	Leu	Ala	Arg	Val	Ala	Ala		
	210					215					220						
Pro	Gly	Ala	Ile	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asp	Leu	Gly		
	225				230					235					240		
Pro	Asp	Glu	Gln	Ser	Leu	His	Pro	Trp	Glu	Gln	Asp	Leu	Leu	Lys	Lys		
				245					250					255			
Ile	Cys	Asp	Ala	Tyr	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Ser	Asp	Tyr		
			260					265					270				
Val	Lys	Leu	Leu	Gln	Ser	Leu	Ser	Leu	Gln	Asp	Ile	Lys	Ser	Glu	Asp		
		275					280					285					
Trp	Ser	Arg	Phe	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Ser	Ala		
	290					295					300						
Phe	Thr	Trp	Lys	Gly	Leu	Ser	Ser	Leu	Leu	Ser	Ser	Gly	Gln	Lys	Thr		
	305				310					315					320		
Ile	Lys	Gly	Ala	Leu	Ala	Met	Pro	Leu	Met	Ile	Glu	Gly	Tyr	Lys	Lys		
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Asp Leu Ile Lys Phe Ala Ile Ile Thr Cys Arg Lys Pro Glu
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<210> 29
 <211> 1257
 <212> DNA
 <213> Triticum aestivum

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 <222> (31)
 <223> n = a, c, g, or t

<220>
 <221> unsure
 <222> (151)
 <223> n = a, c, g, or t

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 ggcctgtcct gccgtcctc cgggccagac ngctccgtgc gcccgatggc gtcgtcgacg 180
 accgcggccc gggcgacgcg gcgcgcgcgg ggctgaagga gggcatcgcg gggctctacg 240
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 actccggcga ggcgcctcc atgtccgacc accgcgcgcg ccagatccgc atgatcgagg 360
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<210> 30
 <211> 366
 <212> PRT
 <213> Triticum aestivum

<220>
 <221> UNSURE
 <222> (5)
 <223> Xaa = ANY AMINO ACID

<220>
 <221> UNSURE
 <222> (45)
 <223> Xaa = ANY AMINO ACID

<400> 30
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Asp Ala Ala Pro Pro Pro Arg Pro Ser Leu Gly His Ala Ala Arg Pro
 20 25 30
 Val Pro Arg Pro Val Leu Pro Leu Leu Pro Ala Arg Xaa Leu Arg Ala
 35 40 45
 Pro Asp Gly Val Val Asp Asp Arg Gly Pro Gly Asp Ala Ala Pro Pro
 50 55 60
 Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Leu
 65 70 75 80
 Trp Glu Ser Ile Trp Gly Glu His Met His His Gly Phe Tyr Asp Ser
 85 90 95
 Gly Glu Ala Ala Ser Met Ser Asp His Arg Arg Ala Gln Ile Arg Met
 100 105 110
 Ile Glu Glu Ala Leu Ala Phe Ala Ala Val Pro Asp Asp Pro Thr Asn
 115 120 125
 Lys Pro Lys Thr Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser
 130 135 140
 Arg Tyr Leu Ala Asn Lys Tyr Gly Ala Gln Cys Ser Gly Ile Thr Leu
 145 150 155 160
 Ser Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Ala Gln Gly
 165 170 175
 Leu Ser Asp Lys Ala Ser Phe Gln Val Ala Asp Ala Leu Glu Gln Pro
 180 185 190
 Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu
 195 200 205
 His Met Pro Asn Lys Gln Lys Phe Val Ser Glu Leu Ala Arg Val Ala
 210 215 220
 Ala Pro Gly Ala Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu
 225 230 235 240
 Ala Pro Ser Glu Asp Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys
 245 250 255
 Lys Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp
 260 265 270
 Tyr Val Lys Ile Ala Glu Ser Leu Ser Leu Glu Asp Ile Lys Thr Ala
 275 280 285
 Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Gln Ser
 290 295 300
 Ala Leu Thr Trp Lys Gly Leu Thr Ser Leu Leu Arg Ser Gly Trp Lys
 305 310 315 320
 Thr Ile Lys Gly Ala Leu Val Met Pro Leu Met Ile Gln Gly Tyr Lys
 325 330 335

Lys Gly Leu Ile Lys Phe Ser Ile Ile Thr Cys Arg Lys Pro Gln Ala
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Ala Ile Glu Gly Glu Pro Glu Ala Ala Ser Pro Ser Val Glu
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<210> 31
 <211> 1605
 <212> DNA
 <213> Catalpa sp.

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 caagctgggtg ggcttcaaga atttcgtcag gaccaacccc aagtccgacc acttctgcgt 240
 ccaccgcttc caccatatag agttctgggtg cggcgacgcc accaacaccg ccaagcgctt 300
 ctcttggggc ctcggtatgc ccctcgtcgc caaatcggat ctttccactg gaaactccgc 360
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 tccttcaatc tccgccccct cctccgcccgc catccccagt ttctccttct ccacctacca 480
 gtcttttacc tcttcccatg gcctcgctgt tcgtgcggtg gctattcagg tcgattcggc 540
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 attcgtgagc tatggtgata atgggacagg ccagatgga tggttcttgc cgggctttga 720
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 caagaacaga gctggagatg tgctgagggga tgagcagatt gaggagtgtg agaagttggg 1200
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<210> 32
 <211> 445
 <212> PRT
 <213> Catalpa sp.

<400> 32
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 Asp Ala His Ala Glu Phe Lys Leu Val Gly Phe Lys Asn Phe Val Arg
 20 25 30
 Thr Asn Pro Lys Ser Asp His Phe Cys Val His Arg Phe His His Ile
 35 40 45
 Glu Phe Trp Cys Gly Asp Ala Thr Asn Thr Ala Lys Arg Phe Ser Trp
 50 55 60

Gly	Leu	Gly	Met	Pro	Leu	Val	Ala	Lys	Ser	Asp	Leu	Ser	Thr	Gly	Asn	65	70	75	80
Ser	Ala	His	Ala	Ser	Tyr	Leu	Leu	Arg	Ser	Gly	Glu	Leu	Asn	Phe	Leu	85	90	95	
Phe	Thr	Ser	Pro	Tyr	Ser	Pro	Ser	Ile	Ser	Ala	Pro	Ser	Ser	Ala	Ala	100	105	110	
Ile	Pro	Ser	Phe	Ser	Phe	Ser	Thr	Tyr	Gln	Ser	Phe	Thr	Ser	Ser	His	115	120	125	
Gly	Leu	Ala	Val	Arg	Ala	Val	Ala	Ile	Gln	Val	Asp	Ser	Ala	Phe	Ser	130	135	140	
Ala	Tyr	Ser	Ala	Ser	Ile	Ser	Arg	Gly	Ala	Lys	Pro	Val	Ser	Ala	Pro	145	150	155	160
Ile	Leu	Leu	Ser	Asp	Asn	Lys	Thr	Ala	Ile	Ala	Glu	Val	His	Leu	Tyr	165	170	175	
Gly	Asp	Ser	Val	Leu	Arg	Phe	Val	Ser	Tyr	Gly	Asp	Asn	Gly	Thr	Gly	180	185	190	
Pro	Asp	Gly	Trp	Phe	Leu	Pro	Gly	Phe	Glu	Pro	Val	Asp	Asp	Gln	Met	195	200	205	
Ser	Tyr	Lys	Glu	Leu	Asp	Tyr	Gly	Ile	Arg	Arg	Leu	Asp	His	Ala	Val	210	215	220	
Gly	Asn	Val	Pro	Glu	Leu	Gly	Pro	Val	Val	Asp	Tyr	Leu	Lys	Lys	Phe	225	230	235	240
Thr	Gly	Phe	His	Glu	Phe	Ala	Glu	Phe	Thr	Ser	Glu	Asp	Val	Gly	Thr	245	250	255	
Ala	Glu	Ser	Gly	Leu	Asn	Ser	Met	Val	Leu	Ala	Asn	Asn	Asn	Glu	Asn	260	265	270	
Val	Leu	Leu	Pro	Leu	Asn	Glu	Pro	Val	Phe	Gly	Thr	Lys	Arg	Lys	Ser	275	280	285	
Gln	Ile	Gln	Thr	Tyr	Leu	Glu	His	Asn	Glu	Gly	Pro	Gly	Val	Gln	His	290	295	300	
Leu	Ala	Leu	Val	Ser	Glu	Asp	Ile	Phe	Asn	Thr	Leu	Arg	Glu	Met	Arg	305	310	315	320
Lys	Arg	Ser	Gly	Val	Gly	Gly	Phe	Glu	Phe	Met	Pro	Ser	Pro	Pro	Leu	325	330	335	
Thr	Tyr	Tyr	Lys	Asn	Leu	Lys	Asn	Arg	Ala	Gly	Asp	Val	Leu	Arg	Asp	340	345	350	
Glu	Gln	Ile	Glu	Glu	Cys	Glu	Lys	Leu	Gly	Ile	Leu	Val	Asp	Arg	Asp	355	360	365	
Asp	Gln	Gly	Thr	Leu	Leu	Gln	Ile	Phe	Thr	Lys	Pro	Val	Gly	Asp	Arg	370	375	380	

Pro Thr Leu Phe Ile Glu Ile Ile Gln Arg Ile Gly Cys Met Leu Lys
385 390 395 400

Asp Glu Gln Gly Lys Leu Tyr Gln Lys Ser Gly Cys Gly Gly Phe Gly
405 410 415

Lys Gly Asn Phe Ser Glu Leu Phe Lys Ser Ile Glu Glu Tyr Glu Lys
420 425 430

Met Leu Glu Ala Lys Gln Val Thr Glu Thr Ala Ser Ala
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<210> 33

<211> 1106

<212> DNA

<213> Oryza sativa

<400> 33

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<210> 34

<211> 235

<212> PRT

<213> Oryza sativa

<400> 34

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Val Pro Glu Leu Ala Pro Val Ala Ala Tyr Ile Ser Gly Phe Thr Gly
          20          25          30

Phe His Glu Phe Ala Glu Phe Thr Ala Glu Asp Val Gly Thr Ala Glu
          35          40          45

Ser Gly Leu Asn Ser Val Val Leu Ala Asn Asn Ala Glu Thr Val Leu
          50          55          60

Leu Pro Leu Asn Glu Pro Val His Gly Thr Lys Arg Arg Ser Gln Ile
          65          70          75          80
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Gln Thr Tyr Leu Asp His His Gly Gly Pro Gly Val Gln His Ile Ala
 85 90 95
 Leu Ala Ser Asp Asp Val Leu Gly Thr Leu Arg Glu Met Arg Ala Arg
 100 105 110
 Ser Ala Met Gly Gly Phe Glu Phe Leu Ala Pro Pro Pro Pro Asn Tyr
 115 120 125
 Tyr Asp Gly Val Arg Arg Arg Ala Gly Asp Val Leu Ser Glu Glu Gln
 130 135 140
 Ile Asn Glu Cys Gln Glu Leu Gly Val Leu Val Asp Arg Asp Asp Gln
 145 150 155 160
 Gly Val Leu Leu Gln Ile Phe Thr Lys Pro Val Gly Asp Arg Pro Thr
 165 170 175
 Phe Phe Leu Glu Met Ile Gln Arg Ile Gly Cys Met Glu Lys Asp Glu
 180 185 190
 Ser Gly Gln Glu Tyr Gln Lys Gly Gly Cys Gly Gly Phe Gly Lys Gly
 195 200 205
 Asn Phe Ser Glu Leu Phe Lys Ser Ile Glu Glu Tyr Glu Lys Ser Leu
 210 215 220
 Glu Ala Lys Gln Ala Pro Thr Val Gln Gly Ser
 225 230 235

<210> 35

<211> 1550

<212> DNA

<213> Glycine max

<400> 35

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atttgagttc	atgccttctc	ctcctcccac	ctattacgcc	aacctccaca	accgtgccgc	1080
tgatgtgttg	accgttgacc	agattaagca	gtgtgaggag	cttgggattc	ttgttgacag	1140
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aaatactcct	ttgttgaaat	gattaatgag	gaatcaatgt	ggcatagggt	gtttatactc	1440

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 cttttatgga tagtattttt ctattaaaaa aaaaaaaaaa aaaaaaaaaa 1550

<210> 36
 <211> 449
 <212> PRT
 <213> Glycine max

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 Arg Thr Asn Pro Lys Ser Asp Arg Phe Gln Val Asn Arg Phe His His
 35 40 45
 Ile Glu Phe Trp Cys Thr Asp Ala Thr Asn Ala Ser Arg Arg Phe Ser
 50 55 60
 Trp Gly Leu Gly Met Pro Ile Val Ala Lys Ser Asp Leu Ser Thr Gly
 65 70 75 80
 Asn Gln Ile His Ala Ser Tyr Leu Leu Arg Ser Gly Asp Leu Ser Phe
 85 90 95
 Leu Phe Ser Ala Pro Tyr Ser Pro Ser Leu Ser Ala Gly Ser Ser Ala
 100 105 110
 Ala Ser Ser Ala Ser Ile Pro Ser Phe Asp Ala Ala Thr Cys Leu Ala
 115 120 125
 Phe Ala Ala Lys His Gly Phe Gly Val Arg Ala Ile Ala Leu Glu Val
 130 135 140
 Ala Asp Ala Glu Ala Ala Phe Ser Ala Ser Val Ala Lys Gly Ala Glu
 145 150 155 160
 Pro Ala Ser Pro Pro Val Leu Val Asp Asp Arg Thr Gly Phe Ala Glu
 165 170 175
 Val Arg Leu Tyr Gly Asp Val Val Leu Arg Tyr Val Ser Tyr Lys Asp
 180 185 190
 Ala Ala Pro Gln Ala Pro His Ala Asp Pro Ser Arg Trp Phe Leu Pro
 195 200 205
 Gly Phe Glu Ala Ala Ala Ser Ser Ser Phe Pro Glu Leu Asp Tyr
 210 215 220
 Gly Ile Arg Arg Leu Asp His Ala Val Gly Asn Val Pro Glu Leu Ala
 225 230 235 240
 Pro Ala Val Arg Tyr Leu Lys Gly Phe Ser Gly Phe His Glu Phe Ala
 245 250 255
 Glu Phe Thr Ala Glu Asp Val Gly Thr Ser Glu Ser Gly Leu Asn Ser
 260 265 270

Val	Val	Leu	Ala	Asn	Asn	Ser	Glu	Thr	Val	Leu	Leu	Pro	Leu	Asn	Glu	
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Pro	Val	Tyr	Gly	Thr	Lys	Arg	Lys	Ser	Gln	Ile	Glu	Thr	Tyr	Leu	Glu	
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His	Asn	Glu	Gly	Ala	Gly	Val	Gln	His	Leu	Ala	Leu	Val	Thr	His	Asp	
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Ile	Phe	Thr	Thr	Leu	Arg	Glu	Met	Arg	Lys	Arg	Ser	Phe	Leu	Gly	Gly	
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Phe	Glu	Phe	Met	Pro	Ser	Pro	Pro	Pro	Thr	Tyr	Tyr	Ala	Asn	Leu	His	
			340						345				350			
Asn	Arg	Ala	Ala	Asp	Val	Leu	Thr	Val	Asp	Gln	Ile	Lys	Gln	Cys	Glu	
		355					360					365				
Glu	Leu	Gly	Ile	Leu	Val	Asp	Arg	Asp	Asp	Gln	Gly	Thr	Leu	Leu	Gln	
		370				375					380					
Ile	Phe	Thr	Lys	Pro	Val	Gly	Asp	Arg	Pro	Thr	Ile	Phe	Ile	Glu	Ile	
385					390					395					400	
Ile	Gln	Arg	Ile	Gly	Cys	Met	Val	Glu	Asp	Glu	Glu	Gly	Lys	Val	Tyr	
			405						410					415		
Gln	Lys	Gly	Ala	Cys	Gly	Gly	Phe	Gly	Lys	Gly	Asn	Phe	Ser	Glu	Leu	
			420					425					430			
Phe	Lys	Ser	Ile	Glu	Glu	Tyr	Glu	Lys	Thr	Leu	Glu	Ala	Lys	Arg	Thr	
		435					440					445				

Ala

<210> 37
 <211> 1614
 <212> DNA
 <213> Triticum aestivum

<400> 37

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gcagcgaccg	cttcacacag	ctcgcttcc	accacgtcga	gttctggtgc	gcggacgccg	180
cctccgccgc	cgccgccttc	gccttcgcgc	tcggcgccgc	gctcgccgcc	aggtccgacc	240
tctccacggg	gaactccgtg	cacgcctccc	agctgctccg	ctcgggcaac	ctcgcttcc	300
tcttcacggc	cccctacgcc	aacggctgcg	acgccgccac	cgctccctg	ccctccttct	360
ccgccgacgc	cgcgcgccag	ttctccgcgg	accacggcct	cgcggtgcgc	tccatagcgc	420
tgcgcgtcgc	ggacgctgcc	gaggccttcc	gcgccagcgt	cgacgggggc	gcgcgcccgc	480
ccttcagccc	tgtggacctc	ggccgcggct	tcggcttcgc	ggaggtcgag	ctctacggcg	540
acgtcgtgct	ccgcttcgtc	agccaccccg	acggcaggga	cgtgcccttc	tgccgggggt	600
tcgagggcgt	gagcaaccca	gacgccgtgg	actacggcct	gacgcggttc	gaccacgtcg	660
tcggcaacgt	ccgggagctt	gccccgcgcg	cggcctacgt	cgccgggttc	acgggggttc	720
acgagttcgc	cgagttcacg	acggaggacg	tgggcacggc	cgagagcggg	ctcaactcga	780
tggtgctcgc	caacaactcg	gagggcgctg	tgctgccgct	caacgagccg	gtgcacggca	840
ccaagcgccg	gagccagata	cagacgttcc	tggaaacacca	cggcggtcgc	ggcggtgcagc	900
acatcgccgt	ggccagcagc	gacgtgctca	ggacgctcag	ggagatgcgt	gcgcgctccg	960
ccatgggcgg	cttcgacttc	ctgccacccc	cgctgccgaa	gtactacgaa	ggcggtgcggc	1020
gcacgcgccg	ggatgtgctc	tcggaggcgc	agatcaaggga	atgccaggag	ctgggggtgc	1080

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tcgtcgacag ggacgaccaa ggggtgttgc tacaaatctt caccaagcca gtaggggaca 1140
ggccgacgtt gttcctggag atgatccaga ggatcgggtg catggagaag gacgagagag 1200
gggaagagta ccagaagggg ggctgcggcg ggctcggcaa aggcaacttc tccgagctgt 1260
tcaagtccat tgaagattac gagaagtccc ttgaagccaa gcaatctgct gcagttcagg 1320
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<210> 38

<211> 433

<212> PRT

<213> Triticum aestivum

<400> 38

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Met Pro Pro Thr Pro Thr Thr Pro Ala Ala Thr Gly Ala Ala Ala Val
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Thr Pro Glu His Ala Arg Pro Arg Arg Met Val Arg Phe Asn Pro Arg
          20              25              30

Ser Asp Arg Phe His Thr Leu Ala Phe His His Val Glu Phe Trp Cys
          35              40              45

Ala Asp Ala Ala Ser Ala Ala Gly Arg Phe Ala Phe Ala Leu Gly Ala
 50              55              60

Pro Leu Ala Ala Arg Ser Asp Leu Ser Thr Gly Asn Ser Val His Ala
 65              70              75              80

Ser Gln Leu Leu Arg Ser Gly Asn Leu Ala Phe Leu Phe Thr Ala Pro
          85              90              95

Tyr Ala Asn Gly Cys Asp Ala Ala Thr Ala Ser Leu Pro Ser Phe Ser
          100              105              110

Ala Asp Ala Ala Arg Gln Phe Ser Ala Asp His Gly Leu Ala Val Arg
          115              120              125

Ser Ile Ala Leu Arg Val Ala Asp Ala Ala Glu Ala Phe Arg Ala Ser
          130              135              140

Val Asp Gly Gly Ala Arg Pro Ala Phe Ser Pro Val Asp Leu Gly Arg
          145              150              155              160

Gly Phe Gly Phe Ala Glu Val Glu Leu Tyr Gly Asp Val Val Leu Arg
          165              170              175

Phe Val Ser His Pro Asp Gly Arg Asp Val Pro Phe Leu Pro Gly Phe
          180              185              190

Glu Gly Val Ser Asn Pro Asp Ala Val Asp Tyr Gly Leu Thr Arg Phe
          195              200              205

Asp His Val Val Gly Asn Val Pro Glu Leu Ala Pro Ala Ala Ala Tyr
          210              215              220

Val Ala Gly Phe Thr Gly Phe His Glu Phe Ala Glu Phe Thr Thr Glu
          225              230              235              240

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Lys Glu Leu Leu Ala Trp Ala Val Pro Gln Asn Ser Ala Lys Pro Arg
 85 90 95
 Lys Ile Leu Asp Leu Gly Cys Gly Ile Gly Gly Ser Ser Leu Tyr Leu
 100 105 110
 Ala Gln Gln His Gln Ala Glu Val Met Gly Ala Ser Leu Ser Pro Val
 115 120 125
 Gln Val Glu Arg Ala Gly Glu Arg Ala Arg Ala Leu Gly Leu Gly Ser
 130 135 140
 Thr Cys Gln Phe Gln Val Ala Asn Ala Leu Asp Leu Pro Phe Ala Ser
 145 150 155 160
 Asp Ser Phe Asp Trp Val Trp Ser Leu Glu Ser Gly Glu His Met Pro
 165 170 175
 Asn Lys Ala Gln Phe Leu Gln Glu Ala Trp Arg Val Leu Lys Pro Gly
 180 185 190
 Gly Arg Leu Ile Leu Ala Thr Trp Cys His Arg Pro Ile Asp Pro Gly
 195 200 205
 Asn Gly Pro Leu Thr Ala Asp Glu Arg Arg His Leu Gln Ala Ile Tyr
 210 215 220
 Asp Val Tyr Cys Leu Pro Tyr Val Val Ser Leu Pro Asp Tyr Glu Ala
 225 230 235 240
 Ile Ala Arg Glu Cys Gly Phe Gly Glu Ile Lys Thr Ala Asp Trp Ser
 245 250 255
 Val Ala Val Ala Pro Phe Trp Asp Arg Val Ile Glu Ser Ala Phe Asp
 260 265 270
 Pro Arg Val Leu Trp Ala Leu Gly Gln Ala Gly Pro Lys Ile Ile Asn
 275 280 285
 Ala Ala Leu Cys Leu Arg Leu Met Lys Trp Gly Tyr Glu Arg Gly Leu
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 Val Arg Phe Gly Leu Leu Thr Gly Ile Lys Pro Leu Val
 305 310 315
 <210> 40
 <211> 348
 <212> PRT
 <213> Arabidopsis thaliana
 <400> 40
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 20 25 30
 Pro Ser Ser Ser Ser Ser Val Ser Met Thr Thr Thr Arg Gly Asn Val
 35 40 45

Ala Val Ala Ala Ala Ala Thr Ser Thr Glu Ala Leu Arg Lys Gly Ile
 50 55 60
 Ala Glu Phe Tyr Asn Glu Thr Ser Gly Leu Trp Glu Glu Ile Trp Gly
 65 70 75 80
 Asp His Met His His Gly Phe Tyr Asp Pro Asp Ser Ser Val Gln Leu
 85 90 95
 Ser Asp Ser Gly His Lys Glu Ala Gln Ile Arg Met Ile Glu Glu Ser
 100 105 110
 Leu Arg Phe Ala Gly Val Thr Asp Glu Glu Glu Glu Lys Lys Ile Lys
 115 120 125
 Lys Val Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu
 130 135 140
 Ala Ser Lys Phe Gly Ala Glu Cys Ile Gly Ile Thr Leu Ser Pro Val
 145 150 155 160
 Gln Ala Lys Arg Ala Asn Asp Leu Ala Ala Ala Gln Ser Leu Ser His
 165 170 175
 Lys Ala Ser Phe Gln Val Ala Asp Ala Leu Asp Gln Pro Phe Glu Asp
 180 185 190
 Gly Lys Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro
 195 200 205
 Asp Lys Ala Lys Phe Val Lys Glu Leu Val Arg Val Ala Ala Pro Gly
 210 215 220
 Gly Arg Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Ser Ala Gly
 225 230 235 240
 Glu Glu Ala Leu Gln Pro Trp Glu Gln Asn Ile Leu Asp Lys Ile Cys
 245 250 255
 Lys Thr Phe Tyr Leu Pro Ala Trp Cys Ser Thr Asp Asp Tyr Val Asn
 260 265 270
 Leu Leu Gln Ser His Ser Leu Gln Asp Ile Lys Cys Ala Asp Trp Ser
 275 280 285
 Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Arg Thr Ala Leu Thr
 290 295 300
 Trp Lys Gly Leu Val Ser Leu Leu Arg Ser Gly Met Lys Ser Ile Lys
 305 310 315 320
 Gly Ala Leu Thr Met Pro Leu Met Ile Glu Gly Tyr Lys Lys Gly Val
 325 330 335
 Ile Lys Phe Gly Ile Ile Thr Cys Gln Lys Pro Leu
 340 345

<210> 41

<211> 434

<212> PRT

<213> Hordeum vulgare

<400> 41

Met	Pro	Pro	Thr	Pro	Thr	Thr	Pro	Ala	Ala	Thr	Gly	Ala	Ala	Ala	Ala	
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			20					25					30			
Arg	Ser	Asp	Arg	Phe	His	Thr	Leu	Ser	Phe	His	His	Val	Glu	Phe	Trp	
		35					40					45				
Cys	Ala	Asp	Ala	Ala	Ser	Ala	Ala	Gly	Arg	Phe	Ala	Phe	Ala	Leu	Gly	
	50					55					60					
Ala	Pro	Leu	Ala	Ala	Arg	Ser	Asp	Leu	Ser	Thr	Gly	Asn	Ser	Ala	His	
65					70					75					80	
Ala	Ser	Gln	Leu	Leu	Arg	Ser	Gly	Ser	Leu	Ala	Phe	Leu	Phe	Thr	Ala	
			85						90						95	
Pro	Tyr	Ala	Asn	Gly	Cys	Asp	Ala	Ala	Thr	Ala	Ser	Leu	Pro	Ser	Phe	
			100					105					110			
Ser	Ala	Asp	Ala	Ala	Arg	Arg	Phe	Ser	Ala	Asp	His	Gly	Ile	Ala	Val	
		115					120					125				
Arg	Ser	Val	Ala	Leu	Arg	Val	Ala	Asp	Ala	Ala	Glu	Ala	Phe	Arg	Ala	
		130				135					140					
Ser	Arg	Arg	Arg	Gly	Ala	Arg	Pro	Ala	Phe	Ala	Pro	Val	Asp	Leu	Gly	
145					150				155						160	
Arg	Gly	Phe	Ala	Phe	Ala	Glu	Val	Glu	Leu	Tyr	Gly	Asp	Val	Val	Leu	
			165					170						175		
Arg	Phe	Val	Ser	His	Pro	Asp	Gly	Thr	Asp	Val	Pro	Phe	Leu	Pro	Gly	
			180					185					190			
Phe	Glu	Gly	Val	Thr	Asn	Pro	Asp	Ala	Val	Asp	Tyr	Gly	Leu	Thr	Arg	
		195					200					205				
Phe	Asp	His	Val	Val	Gly	Asn	Val	Pro	Glu	Leu	Ala	Pro	Ala	Ala	Ala	
	210					215					220					
Tyr	Ile	Ala	Gly	Phe	Thr	Gly	Phe	His	Glu	Phe	Ala	Glu	Phe	Thr	Ala	
225					230				235						240	
Glu	Asp	Val	Gly	Thr	Thr	Glu	Ser	Gly	Leu	Asn	Ser	Val	Val	Leu	Ala	
			245						250					255		
Asn	Asn	Ser	Glu	Gly	Val	Leu	Leu	Pro	Leu	Asn	Glu	Pro	Val	His	Gly	
			260					265					270			
Thr	Lys	Arg	Arg	Ser	Gln	Ile	Gln	Thr	Phe	Leu	Glu	His	His	Gly	Gly	
		275					280					285				
Pro	Gly	Val	Gln	His	Ile	Ala	Val	Ala	Ser	Ser	Asp	Val	Leu	Arg	Thr	
	290					295					300					

Leu Arg Lys Met Arg Ala Arg Ser Ala Met Gly Gly Phe Asp Phe Leu
 305 310 315 320
 Pro Pro Pro Leu Pro Lys Tyr Tyr Glu Gly Val Arg Arg Leu Ala Gly
 325 330 335
 Asp Val Leu Ser Glu Ala Gln Ile Lys Glu Cys Gln Glu Leu Gly Val
 340 345 350
 Leu Val Asp Arg Asp Asp Gln Gly Val Leu Leu Gln Ile Phe Thr Lys
 355 360 365
 Pro Val Gly Asp Arg Pro Thr Leu Phe Leu Glu Met Ile Gln Arg Ile
 370 375 380
 Gly Cys Met Glu Lys Asp Glu Arg Gly Glu Glu Tyr Gln Lys Gly Gly
 385 390 395 400
 Cys Gly Gly Phe Gly Lys Gly Asn Phe Ser Glu Leu Phe Lys Ser Ile
 405 410 415
 Glu Asp Tyr Glu Lys Ser Leu Glu Ala Lys Gln Ser Ala Ala Val Gln
 420 425 430

Gly Ser

<210> 42
 <211> 442
 <212> PRT
 <213> Daucus carota

<400> 42
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 20 25 30
 Arg Ala Asn Pro Lys Ser Asp His Phe Ala Val Lys Arg Phe His His
 35 40 45
 Ile Glu Phe Trp Cys Gly Asp Ala Thr Asn Thr Ser Arg Arg Phe Ser
 50 55 60
 Trp Gly Leu Gly Met Pro Leu Val Ala Lys Ser Asp Leu Ser Thr Gly
 65 70 75 80
 Asn Ser Val His Ala Ser Tyr Leu Val Arg Ser Ala Asn Leu Ser Phe
 85 90 95
 Val Phe Thr Ala Pro Tyr Ser Pro Ser Thr Thr Thr Ser Ser Gly Ser
 100 105 110
 Ala Ala Ile Pro Ser Phe Ser Ala Ser Gly Phe His Ser Phe Ala Ala
 115 120 125
 Lys His Gly Leu Ala Val Arg Ala Ile Ala Leu Glu Val Ala Asp Val
 130 135 140

Ala Ala Ala Phe Glu Ala Ser Val Ala Arg Gly Ala Arg Pro Ala Ser
 145 150 155 160
 Ala Pro Val Glu Leu Asp Asp Gln Ala Trp Leu Ala Glu Val Glu Leu
 165 170 175
 Tyr Gly Asp Val Val Leu Arg Phe Val Ser Phe Gly Arg Glu Glu Gly
 180 185 190
 Leu Phe Leu Pro Gly Phe Glu Ala Val Glu Gly Thr Ala Ser Phe Pro
 195 200 205
 Asp Leu Asp Tyr Gly Ile Arg Arg Leu Asp His Ala Val Gly Asn Val
 210 215 220
 Thr Glu Leu Gly Pro Val Val Glu Tyr Ile Lys Gly Phe Thr Gly Phe
 225 230 235 240
 His Glu Phe Ala Glu Phe Thr Ala Glu Asp Val Gly Thr Leu Glu Ser
 245 250 255
 Gly Leu Asn Ser Val Val Leu Ala Asn Asn Glu Glu Met Val Leu Leu
 260 265 270
 Pro Leu Asn Glu Pro Val Tyr Gly Thr Lys Arg Lys Ser Gln Ile Gln
 275 280 285
 Thr Tyr Leu Glu His Asn Glu Gly Ala Gly Val Gln His Leu Ala Leu
 290 295 300
 Val Ser Glu Asp Ile Phe Arg Thr Leu Arg Glu Met Arg Lys Arg Ser
 305 310 315 320
 Cys Leu Gly Gly Phe Glu Phe Met Pro Ser Pro Pro Pro Thr Tyr Tyr
 325 330 335
 Lys Asn Leu Lys Asn Arg Val Gly Asp Val Leu Ser Asp Glu Gln Ile
 340 345 350
 Lys Glu Cys Glu Asp Leu Gly Ile Leu Val Asp Arg Asp Asp Gln Gly
 355 360 365
 Thr Leu Leu Gln Ile Phe Thr Lys Pro Val Gly Asp Arg Pro Thr Leu
 370 375 380
 Phe Ile Glu Ile Ile Gln Arg Val Gly Cys Met Leu Lys Asp Asp Ala
 385 390 395 400
 Gly Gln Met Tyr Gln Lys Gly Gly Cys Gly Gly Phe Gly Lys Gly Asn
 405 410 415
 Phe Ser Glu Leu Phe Lys Ser Ile Glu Glu Tyr Glu Lys Thr Leu Glu
 420 425 430
 Ala Lys Gln Ile Thr Gly Ser Ala Ala Ala
 435 440

<210> 43

<211> 445

<212> PRT

<213> Arabidopsis thaliana

<400> 43

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			20					25					30		
Val	Arg	Lys	Asn	Pro	Lys	Ser	Asp	Lys	Phe	Lys	Val	Lys	Arg	Phe	His
		35					40					45			
His	Ile	Glu	Phe	Trp	Cys	Gly	Asp	Ala	Thr	Asn	Val	Ala	Arg	Arg	Phe
	50					55					60				
Ser	Trp	Gly	Leu	Gly	Met	Arg	Phe	Ser	Ala	Lys	Ser	Asp	Leu	Ser	Thr
65					70					75					80
Gly	Asn	Met	Val	His	Ala	Ser	Tyr	Leu	Leu	Thr	Ser	Gly	Asp	Leu	Arg
			85						90					95	
Phe	Leu	Phe	Thr	Ala	Pro	Tyr	Ser	Pro	Ser	Leu	Ser	Ala	Gly	Glu	Ile
			100					105					110		
Lys	Pro	Thr	Thr	Thr	Ala	Ser	Ile	Pro	Ser	Phe	Asp	His	Gly	Ser	Cys
		115					120					125			
Arg	Ser	Phe	Phe	Ser	Ser	His	Gly	Leu	Gly	Val	Arg	Ala	Val	Ala	Ile
	130					135					140				
Glu	Val	Glu	Asp	Ala	Glu	Ser	Ala	Phe	Ser	Ile	Ser	Val	Ala	Asn	Gly
145					150					155					160
Ala	Ile	Pro	Ser	Ser	Pro	Pro	Ile	Val	Leu	Asn	Glu	Ala	Val	Thr	Ile
			165						170					175	
Ala	Glu	Val	Lys	Leu	Tyr	Gly	Asp	Val	Val	Leu	Arg	Tyr	Val	Ser	Tyr
			180					185					190		
Lys	Ala	Glu	Asp	Thr	Glu	Lys	Ser	Glu	Phe	Leu	Pro	Gly	Phe	Glu	Arg
		195					200					205			
Val	Glu	Asp	Ala	Ser	Ser	Phe	Pro	Leu	Asp	Tyr	Gly	Ile	Arg	Arg	Leu
	210					215					220				
Asp	His	Ala	Val	Gly	Asn	Val	Pro	Glu	Leu	Gly	Pro	Ala	Leu	Thr	Tyr
225					230					235					240
Val	Ala	Gly	Phe	Thr	Gly	Phe	His	Gln	Phe	Ala	Glu	Phe	Thr	Ala	Asp
			245						250					255	
Asp	Val	Gly	Thr	Ala	Glu	Ser	Gly	Leu	Asn	Ser	Ala	Val	Leu	Ala	Ser
			260					265					270		
Asn	Asp	Glu	Met	Val	Leu	Leu	Pro	Ile	Asn	Glu	Pro	Val	His	Gly	Thr
		275					280					285			
Lys	Arg	Lys	Ser	Gln	Ile	Gln	Thr	Tyr	Leu	Glu	His	Asn	Glu	Gly	Ala
	290					295						300			

Gly	Leu	Gln	His	Leu	Ala	Leu	Met	Ser	Glu	Asp	Ile	Phe	Arg	Thr	Leu	305	310	315	320
Arg	Glu	Met	Arg	Lys	Arg	Ser	Ser	Ile	Gly	Gly	Phe	Asp	Phe	Met	Pro	325	330	335	
Ser	Pro	Pro	Pro	Thr	Tyr	Tyr	Gln	Asn	Leu	Lys	Lys	Arg	Val	Gly	Asp	340	345	350	
Val	Leu	Ser	Asp	Asp	Gln	Ile	Lys	Glu	Cys	Glu	Glu	Leu	Gly	Ile	Leu	355	360	365	
Val	Asp	Arg	Asp	Asp	Gln	Gly	Thr	Leu	Leu	Gln	Ile	Phe	Thr	Lys	Pro	370	375	380	
Leu	Gly	Asp	Arg	Pro	Thr	Ile	Phe	Ile	Glu	Ile	Ile	Gln	Arg	Val	Gly	385	390	395	400
Cys	Met	Met	Lys	Asp	Glu	Glu	Gly	Lys	Ala	Tyr	Gln	Ser	Gly	Gly	Cys	405	410	415	
Gly	Gly	Phe	Gly	Lys	Gly	Asn	Phe	Ser	Glu	Leu	Phe	Lys	Ser	Ile	Glu	420	425	430	
Glu	Tyr	Glu	Lys	Thr	Leu	Glu	Ala	Lys	Gln	Leu	Val	Gly				435	440	445	